

SECTION 4

NORMAL PROCEDURES

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All airspeeds quoted in this section are indicated airspeeds (IAS) and assume zero instrument error.

Closed [BRACKETS] in this section denote annunciator(s).

AIRSPEEDS FOR SAFE OPERATION (10,100 POUNDS / 4581 KILOGRAMS)

Maximum Demonstrated Crosswind Component	25 knots
Takeoff Speeds (Flaps Up):	
Rotation	97 knots
50-Ft.	104 knots
Two-Engine Best Angle-of-Climb Speed (V_X)	101 knots
Two-Engine Best Rate-of-Climb Speed (V_Y)	112 knots
Cruise Climb Speeds:	
Sea Level to 10,000 feet	150 knots
10,000 to 20,000 feet	130 knots
20,000 to 25,000 feet	120 knots
25,000 to 30,000 feet	110 knots
Maneuvering Speed	169 knots
Turbulent Air Penetration	161 knots

CAUTION

For turbulent air penetration, use an airspeed of 161 knots. Avoid over-action on power levers. Turn off autopilot altitude hold. Keep wings level, maintain attitude and avoid use of trim. Do not chase airspeed and altitude. Penetration should be at an altitude which provides adequate maneuvering margins when severe turbulence is encountered.

Maximum Airspeed for Effective Windshield Anti-icing	226 knots
Landing Final Approach (Flaps Down) at 9600 lbs/4354 kg.	101 knots
Balked Landing Climb Speed	101 knots
Intentional One-Engine-Inoperative Speed (V_{SSE})	97 knots
Air Minimum Control Speed (V_{MCA})	80 knots

PROCEDURES BY FLIGHT PHASE

NOTE

Refer to all applicable Supplements for flight phase procedures and for optional equipment installed in the airplane.

PREFLIGHT INSPECTION

NOTE

After the first flight of each day, the Preflight Inspection may be omitted except for items marked with a "+" (Fuel Tank Caps and Engine Oil Quantity/Filler Cap need not be checked unless system(s) were serviced.)

COCKPIT

1. Parking Brake SET
- + 2. Control Locks REMOVE
3. Elevator Trim SET TO "0" UNITS

CAUTION

The elevator trim system must not be forced past the limits which are indicated on the elevator trim indicator scale, either manually, electrically, or by action of the autopilot.

4. Battery ON, CHECK 23 VOLTS MINIMUM
5. Fuel Quantity CHECK
6. Battery OFF
7. Oxygen System Preflight Inspection COMPLETE
 - a. Passenger Oxygen Masks CHECK CONDITION AND STOW
(plug must be color-coded red)
 - b. Oxygen System Control PULL ON
 - c. Crew DON MASKS, CHECK FIT AND OPERATION. SET MASKS AT 100% POSITION, THEN STOW
 - d. Oxygen Duration DETERMINE
(See OTHER PROCEDURES)

LEFT WING

1. Flaps CHECK
2. Aileron and Tab CHECK
3. Wing Tip and Lights CHECK
4. Stall Warning CHECK
5. Deice Boot CHECK
- + 6. Tie-down and Chocks REMOVE
- + 7. Wing Fuel Tank CHECK QUANTITY; CAP SECURE
8. Outboard Wing Sump DRAIN
9. Wheel Well Sump DRAIN
- +10. Landing Gear, Strut, Brake, Wheel Well, and Landing Gear Doors CHECK
11. Fire Extinguisher (if installed) CHECK PRESSURE

FIRE EXTINGUISHER PRESSURE VS. TEMPERATURE

°F	-40	-20	0	20	40	60	80	100	120
°C	-40	-29	-18	-7	4	16	27	38	49
PSI	190	220	250	290	340	390	455	525	605
Range	to 240	to 275	to 315	to 365	to 420	to 480	to 550	to 635	to 730

12. Boost Pump Sump DRAIN
13. Prop CHECK
14. Engine Air Intakes CLEAR
- +15. Engine Oil CHECK QUANTITY; CAP SECURE
16. Fuel Strainer (Firewall) DRAIN
17. Cowling, Doors, and Panels SECURE
- +18. Nacelle Fuel Tank CHECK; CAP SECURE
19. Heat Exchanger Inlet CLEAR
20. Transfer Pump Sump DRAIN
21. Lower Antennas and Beacon CHECK

NOSE SECTION

1. OAT Probe CHECK
2. Brake Reservoir Vent CLEAR
3. Ram Air Inlet CLEAR

4. Left Avionics Access Panel/Baggage Door SECURE
5. Air Conditioner Condenser Exhaust Duct CLEAR
6. Windshield and Wipers CHECK
7. Radome CHECK
8. Pitot Masts CLEAR
9. Landing and Taxi Lights CHECK
- +10. Nose Gear (shimmy damper, stop block, torque knee, strut, tire). CHECK
- +11. Chocks REMOVE
12. Nose Gear Doors and Wheel Well CHECK
13. Air Conditioner Condenser Intake Duct CLEAR
14. Right Avionics Access Panel SECURE

RIGHT WING

1. Transfer Pump Sump DRAIN
2. Heat Exchanger Inlet CLEAR
- + 3. Nacelle Fuel Tank CHECK; CAP SECURE
4. Prop CHECK
5. Engine Air Intakes CLEAR
- + 6. Engine Oil CHECK QUANTITY; CAP SECURE
7. Fuel Strainer (Firewall) DRAIN
8. Cowling, Doors, and Panels SECURE
9. Fire Extinguisher (if installed) CHECK PRESSURE
10. Boost Pump Sump DRAIN
- +11. Landing Gear, Strut, Brake, Wheel Well, and Landing Gear Doors CHECK
12. Wheel Well Sump DRAIN
13. Outboard Wing Sump DRAIN
- +14. Wing Fuel Tank CHECK QUANTITY; CAP SECURE
- +15. Tie-down and Chocks REMOVE
16. Deice Boot CHECK
17. Wing Tip and Lights CHECK
18. Aileron CHECK
19. Flaps CHECK

FUSELAGE (RIGHT)

1. Oxygen Door SECURE
2. Emergency Locator Transmitter (aft fuselage installations) ARM
3. Static Ports CLEAR
4. Access Panels SECURE

TAIL SECTION

- + 1. Tie-down REMOVE
2. Deice Boots CHECK
3. Control Surfaces and Tabs CHECK
4. Light(s) CHECK
5. Top Antennas and Beacon CHECK
6. Elevator Trim Tab VERIFY "0" (NEUTRAL) POSITION

NOTE

The elevator trim tab "0" (neutral) position is determined by observing that the alignment marks on the elevator trim tab push rods align with the alignment marks on the elevator when the elevator is resting against the downstops.

FUSELAGE (LEFT)

1. Access Panels SECURE
2. Static Ports CLEAR

NOTE

To obtain lighting for cabin entry, use the switch located next to cabin floor at left side of entry door.

BEFORE ENGINE STARTING

Items marked with an "*" may be omitted at pilot's discretion after the first flight of each day.

1. Cabin Door LIFT STEP, CHECK LOCKED
(Check security by attempting to turn handle toward unlocked position without depressing release button. Handle should not move.)

WARNING

Only a crew member or properly trained ground personnel should close and lock the cabin door.

2. Cabin and/or Cockpit Lighting:
 - a. With Battery Switch OFF: PUSH INSTRUMENT EMERGENCY LIGHTS switch at the right end of the overhead light control panel for partial indirect instrument lights.
 - b. With Battery Switch ON:
 - 1) Indirect instrument lights are available using control on overhead light control panel.
 - 2) Cabin lights are available using switch on copilot's left subpanel.
 - c. With Battery Switch ON and Bus Ties Switch MAN CLOSE - all cockpit lights and external lights are available.
- * 3. Monogram Electric Toilet (if installed) KNIFE VALVE OPEN
4. Load and Baggage SECURE
5. Weight and CG CHECKED
- * 6. Emergency Exit LATCHED
7. Seats and Tables POSITIONED
 - a. All Seats - Seatbacks Upright, Headrests fully extended
 - b. Lateral-tracking Seats - Outboard position
 - c. Tables - Stowed
8. Control Locks REMOVE
9. Seat Belts and Shoulder Harnesses FASTENED
10. Parking Brake CONFIRM SET
11. Overhead Panel CHECK
- * 12. Oxygen System Preflight Inspection CONFIRM COMPLETE
13. Oxygen System Control CONFIRM ON
14. Right Side Panel Circuit Breakers CHECK
- * 15. Alternate Static Air Source NORMAL
16. Copilot's Mic Switch AS REQUIRED
17. Cabin Temp Mode OFF
18. Vent Blower AUTO
19. Bleed Air Valves OPEN
20. Condition Levers FUEL CUT-OFF

- 21. Prop Levers HIGH RPM
- 22. Power Levers IDLE
- 23. EFIS Power Switches (if installed) OFF
- 24. Landing Gear Control DOWN
- 25. Left Subpanel Switches OFF, OR AS REQUIRED
- 26. Engine Anti-ice ON

CAUTION

To minimize ingestion of ground debris, the engine anti-ice system should be ON for all ground operations.

- 27. Pilot's Mic Switch AS REQUIRED
- 28. EFIS Aux Power (if installed) CHECK
 - a. ON-OFF-TEST Switch HOLD TO TEST FOR A MAXIMUM OF 5 SECONDS
(check for momentary illumination of green TEST annunciator)
 - b. ON-OFF-TEST Switch RELEASE TO OFF
- 29. Fuel System CHECK
 - * a. Circuit Breakers IN
 - * b. Battery ON
 - * c. Fuel FW Shutoff Valves CLOSE
 - * d. Battery OFF
 - * e. Crossfeed OPEN
[FUEL CROSSFEED] - ILLUMINATED, THEN CLOSE
 - f. Boost Pumps ON (listen for operation)
 - g. Battery ON
[L FUEL PRESS] and [R FUEL PRESS] - ILLUMINATED
 - h. Firewall Fuel Valves OPEN
[L FUEL PRESS] and [R FUEL PRESS] - EXTINGUISHED
 - i. Fuel Quantity CHECK
 - * j. Transfer Pumps TEST
 - 1) Transfer Pumps AUTO
 - 2) Transfer Test Switch LEFT, THEN RIGHT
[L NO FUEL XFER], then [R NO FUEL XFER] - BLINK
 - 3) Transfer Pumps OFF

If transfer pumps begin operating when AUTO is selected, annunciators will not blink.

Use the following procedure.

- 4) Transfer Test Switch HOLD TO LEFT SIDE
- 5) Left Transfer Pump AUTO, THEN OFF
[L NO FUEL XFER] - BLINKS
- 6) Transfer Test Switch HOLD TO RIGHT SIDE
- 7) Right Transfer Pump AUTO, THEN OFF
[R NO FUEL XFER] - BLINKS
- 8) Transfer Test Switch RELEASE
- 30. Voltmeter:
 - a. BAT and CTR 23 VOLTS MIN
 - b. TPL FED 22 VOLTS MIN
 - c. LEFT & RIGHT GENERATOR, EXT PWR 0 VOLTS
- * 31. Stall Warning Annunciator PRESS TO TEST
- * 32. Annunciator Lights TEST
- * 33. Fire Detectors (if installed) and Fire Extinguisher (if installed) TEST

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- * 34. Landing Gear Control Lights TEST
- * 35. Gear Down AnnunciatorsCHECK
- * 36. Hyd Fluid Sensor..... TEST
[HYD FLUID LO] - ILLUMINATED
- 37. Beacon ON
(Beacon will not illuminate until a generator, or external power is on line or BUS TIES are manually closed)

ENGINE STARTING (BATTERY)

- 1. Right Ignition and Engine Start ON
[R IGNITION ON] - ILLUMINATED
- 2. Right Condition Lever (12% N₁ minimum)..... LOW IDLE
- 3. Right ITT and N₁MONITOR (1090°C maximum)

CAUTION

If no ITT rise is observed within 10 seconds after moving the Condition Lever to LOW IDLE, move the Condition Lever to CUT-OFF and Start Switch to OFF. Allow 30 seconds for fuel to drain and starter to cool; then follow ENGINE CLEARING procedures. If starting attempt is discontinued, the entire starting sequence must be repeated after allowing the engine to come to a complete stop.

- 4. Right Oil PressureCHECK
- 5. Right Ignition and Engine Start (51% N₁ or above)..... OFF
- 6. Right Condition Lever HIGH IDLE
- 7. Right Generator RESET, THEN ON
[R DC GEN], [L GEN TIE OPEN], and [R GEN TIE OPEN] - EXTINGUISHED
- 8. Battery CHARGE
(until loadmeter reads approximately 50% or less)

NOTE

Airplanes Prior To LJ-1534:

The [BATTERY CHARGE] will illuminate approximately 6 seconds after generator is on the line. If the annunciator does not extinguish within 5 minutes, refer to the BATTERY CHARGE RATE procedure in Section 3A, ABNORMAL PROCEDURES.

- 9. Left Ignition and Engine Start ON
[L IGNITION ON] - ILLUMINATED
- 10. Left Condition Lever (12% N₁ minimum)..... LOW IDLE
- 11. Left ITT and N₁MONITOR (1090°C maximum)
- 12. Left Oil PressureCHECK
- 13. Left Ignition and Engine Start (51% N₁ or above)..... OFF
- 14. Right Condition Lever REDUCE TO LOW IDLE
- 15. Left and Right Prop RPM..... 1100 MINIMUM
- 16. Voltmeter (L GEN)..... 27.5 TO 29.0 VOLTS
- 17. Left Generator RESET, then ON
[L DC GEN] - EXTINGUISHED
- 18. Right Generator..... RESET, THEN ON
[L GEN TIE OPEN] and [R GEN TIE OPEN]
remain extinguished with switch in the reset position)
- 19. Condition LeversAS REQUIRED

ENGINE STARTING (EXTERNAL POWER)

CAUTION

NEVER CONNECT AN EXTERNAL POWER SOURCE TO THE AIRPLANE UNLESS A BATTERY INDICATING A CHARGE OF AT LEAST 20 VOLTS IS IN THE AIRPLANE. If the battery voltage is less than 20 volts, the battery must be recharged, or replaced with a battery indicating at least 20 volts, before connecting external power.

NOTE

When an external power source is used, it must be set to 28.0 to 28.4 volts and be capable of producing 1000 amperes momentarily and 300 amperes continuously. The battery should be ON to absorb transients present in some external power sources. An [EXT PWR] is provided to alert the crew when an external DC power plug is connected to the airplane.

1. Avionics Master. OFF
2. Left and Right Generators. OFF
3. Battery. ON
4. External Power Output Voltage SET (28.0 - 28.4 VOLTS)
5. External Power OFF and CONNECT TO AIRPLANE
[EXT PWR] - ILLUMINATED
6. External Power ON
7. Volt Meter (EXT PWR) 28.0 - 28.4 VOLTS
8. EXT PWR Switch (if voltage is within acceptable limits). ON

NOTE

Airplanes Prior To LJ-1534:

The [BATTERY CHARGE] will illuminate approximately 6 seconds after generator is on the line. If the annunciator does not extinguish within 5 minutes, refer to the BATTERY CHARGE RATE procedure in Section 3A, ABNORMAL PROCEDURES.

9. Prop Controls FEATHERED
10. Right Ignition and Engine Start ON
[R IGNITION ON] - ILLUMINATED
11. Right Condition Lever (12% N₁ minimum) LOW IDLE
12. Right ITT and N₁ MONITOR (1090°C maximum)

CAUTION

If no ITT rise is observed within 10 seconds after moving the Condition Lever to LOW IDLE, move the Condition Lever to CUT-OFF and IGNITION AND ENGINE START switch to OFF. Allow 30 seconds for fuel to drain and starter to cool, then follow ENGINE CLEARING procedures. If starting attempt is discontinued, the entire starting sequence must be repeated after allowing the engine to come to a complete stop.

13. Right Oil Pressure CHECK
14. Right Ignition and Engine Start (51% N₁ or above). OFF
15. Left Ignition and Engine Start ON
[L IGNITION ON] - ILLUMINATED
16. Left Condition Lever (12% N₁ minimum). LOW IDLE
17. Left ITT and N₁ MONITOR (1090°C maximum)
18. Left Oil Pressure CHECK
19. Left Ignition and Engine Start (51% N₁ or above). OFF
20. EXT PWR Switch OFF
21. External Power Source TURN OFF;
DISCONNECT FROM AIRPLANE; DOOR SECURE
22. [EXT PWR] VERIFY EXTINGUISHED

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- 23. Right Generator RESET, THEN ON
[R DC GEN], [L GEN TIE OPEN], and [R GEN TIE OPEN] - EXTINGUISHED
- 24. Voltmeter (L GEN) 27.5 TO 29.0 VOLTS
- 25. Left Generator RESET, THEN ON
[L DC GEN] - EXTINGUISHED
- 26. Right Generator RESET, THEN ON
[L GEN TIE OPEN] and [R GEN TIE OPEN]
remain extinguished with switch in the reset position)
- 27. Prop Controls FULL FORWARD
- 28. Left and Right Prop RPM 1100 MINIMUM

HOT START OR HUNG START

If rate of ITT increase predicts an over-temperature occurrence, or if N₁ ceases to accelerate in a normal manner:

- 1. Condition Lever FUEL CUTOFF
- 2. Ignition and Engine Start STARTER ONLY
(for remainder of starter time limit)
- 3. Ignition and Engine Start OFF
- 4. Do not attempt another start until the cause of the hot start or hung start has been corrected.

NO LIGHT START

If no ITT rise is observed within 10 seconds after moving the Condition Lever to LOW IDLE:

- 1. Condition Lever FUEL CUTOFF
- 2. Ignition and Engine Start OFF
- 3. Follow ENGINE CLEARING procedure.

ENGINE CLEARING

Use the following procedure to remove internally trapped fuel and vapor, or if there is evidence of a fire within the engine.

- 1. Condition Lever CONFIRM FUEL CUTOFF
- 2. Starter COOL FOR 1 MINUTE AFTER PREVIOUS START ATTEMPT
- 3. Ignition and Engine Start STARTER ONLY
(for a maximum of 40 seconds)
- 4. Ignition and Engine Start OFF
- 5. Starter COOL FOR 1 MINUTE BEFORE ATTEMPTING ANOTHER START

BEFORE TAXI

- 1. Transfer Pumps AUTO
- 2. Crossfeed AUTO
- 3. Both Inverters CHECK
(volts = 105 - 120, freq = 380 - 420 Hz, [INVERTER] illuminates with inverter off)
- 4. Inverter To Be Used ON
- 5. Electrical System CHECK
 - a. GEN TIES OPEN
[L GEN TIE OPEN] and [R GEN TIE OPEN] - ILLUMINATED
 - b. Voltmeter CHECK
 - 1) TPL FED 26.5 TO 28.0 VOLTS
 - 2) R GEN and L GEN 27.5 TO 29.0 VOLTS
(within 1.0 volt of each other)
 - 3) CTR 23 VOLTS MINIMUM

- c. Gen Ties. NORM
[L GEN TIE OPEN] and [R GEN TIE OPEN] - EXTINGUISHED
- d. Bus Sense Switch MOMENTARILY TO TEST
[L GEN TIE OPEN], [R GEN TIE OPEN], and [BAT TIE OPEN] - ILLUMINATED
- e. Voltmeter (CTR) 0 VOLTS
- f. Bus Sense Switch MOMENTARILY TO RESET
[L GEN TIE OPEN], [R GEN TIE OPEN], and [BAT TIE OPEN] - EXTINGUISHED
- g. Voltmeter (CTR) 27.5 TO 29.0 VOLTS
- h. Generator Load PARALLELED WITHIN 10%
- 6. Avionics Master. ON
- 7. EFIS Power (if installed) ON
- 8. EFIS Aux Power (if installed) ON
- 9. External Lights AS REQUIRED
- 10. Environmental System Controls SET
(observe N₁, ITT, and generator limits if air conditioning or electric heat is used.)
- a. Vent Blower AS REQUIRED

NOTE

With the Cabin Temp Mode set to AUTO, MAN HEAT, or MAN COOL and the vent blower set to AUTO, the ventilation blower operates in the low position. For increased air circulation, turn the blower switch to HIGH.

- b. Cabin Temp Control AS REQUIRED
- c. Cabin Temp Mode AUTO
- d. Bleed Air Valves. OPEN OR CLOSED
 - 1) Use OPEN for more efficient heating on the ground.
 - 2) Use CLOSED for more efficient cooling on the ground.
- e. Electric Heat (ground operations only) AS REQUIRED

NOTE

Electric heat in the NORM position is automatically controlled when the Cabin Temperature Mode control is in AUTO. The GND MAX position may be used for fast warm up. Observe N₁, ITT, and generator limits when operating in this mode. The electric heat switch is solenoid-held in the GND MAX position and will drop to the NORM position at lift-off.

- 1) Cabin Temp Mode AUTO OR MAN HEAT
- 2) Vent Blower HIGH
- 3) Electric Heat NORM OR GROUND MAX
- f. Cabin Air AS REQUIRED
 - 1) Pull to increase airflow to the cockpit.
 - 2) Push to increase airflow to the cabin.
- g. Copilot Air. AS REQUIRED
- h. Pilot Air. AS REQUIRED
- i. Windshield Defrost AS REQUIRED
 - 1) Pull to increase; push to decrease.
 - 2) Push the pilot and copilot air controls fully in and pull the Cabin Air Control fully out if increased windshield defrost airflow is required.
- 11. Cabin Sign FSB or NO SMOKE & FSB
- 12. Instruments CHECK

TAXI

1. BrakesCHECK
2. GyrosCHECK

NOTE

Care must be exercised during taxi on unimproved surfaces. If possible, conduct engine runup on a hard surface free of sand and gravel, to preclude pitting of propeller blades and airplane surfaces.

BEFORE TAKEOFF (RUNUP)

Items marked with an "" may be omitted at pilot's discretion after the first flight of each day.*

CAUTION

If either [CHIP DETECT] illuminates during runup, do not take off. Shut down the engine, investigate the cause and initiate necessary repairs.

1. Boost Pumps and Auto Crossfeed TEST
 - a. Left Boost Pump OFF
[L FUEL PRESS] - EXTINGUISHED
[FUEL CROSSFEED] - ILLUMINATED
 - b. Left Boost Pump ON
 - c. Crossfeed CLOSE, THEN AUTO
[FUEL CROSSFEED] - EXTINGUISHED
 - d. Right Boost Pump OFF
[R FUEL PRESS] - EXTINGUISHED
[FUEL CROSSFEED] - ILLUMINATED
 - e. Right Boost Pump ON
 - f. Crossfeed CLOSE, THEN AUTO
[FUEL CROSSFEED] - EXTINGUISHED
2. Avionics and RadarCHECK
3. EFIS (if installed)CHECK
4. Pressurization CHECK AND SET
 - * a. Cabin Altitude Selector Knob ADJUST
SO THAT "CABIN ALT" DIAL INDICATES AN ALTITUDE 1000 FEET BELOW FIELD PRESSURE ALTITUDE.
 - * b. Rate Control Selector KnobSET INDEX AT 12-O'CLOCK POSITION
 - * c. Condition Levers HIGH IDLE
 - * d. Cabin Pressurization Switch HOLD AT THE "TEST" POSITION
 - * e. Cabin Climb Indicator CHECK FOR RATE OF DESCENT INDICATION
 - * f. Cabin Pressurization Switch RELEASE TO THE "PRESS" POSITION
WHEN PRESSURIZING IS CONFIRMED
 - * g. Condition Levers LOW IDLE
 - h. Cabin Altitude Selector Knob ADJUST
SO THAT INNER SCALE (ACFT ALT) INDICATES PLANNED CRUISE ALTITUDE PLUS 1000 FEET. (If this setting does not result in an outer scale (CABIN ALT) indication of at least 500 feet above take-off field pressure altitude, adjust as required.)
5. AutopilotCHECK, THEN OFF
6. Electric Elevator Trim ControlCHECK
(Refer to appropriate Autopilot Flight Manual Supplement for possible variations to these procedures)
 - * a. Elevator Trim Switch ON
 - * b. Pilot's Control Wheel Trim Switch CHECK OPERATION
7. Trim TabsSET
8. Engine Control Friction LocksSET

- 9. Flaps CHECK AND CONFIRM UP
- 10. Flight Controls CHECK FREEDOM OF MOVEMENT AND PROPER DIRECTION OF TRAVEL
- * 11. Engine Anti-ice CHECK
- * 12. Overspeed Governors TEST
 - a. Rudder Boost Control Switch RUDDER BOOST
 - b. Prop Levers HIGH RPM (Balance of test is performed on individual engines)
 - c. Prop Gov Test Switch HOLD TO PROP GOV TEST
 - d. Power Lever INCREASE UNTIL PROP IS STABILIZED AT 1940 TO 2060 RPM.
CONTINUE TO INCREASE UNTIL RUDDER MOVEMENT
IS NOTED. (observe ITT and Torque Limits)

NOTE

Left rudder pedal will follow left POWER LEVER movement and right rudder pedal will follow right POWER LEVER movement.

- e. Power Lever IDLE
- f. Repeat steps d and e on the opposite engine.
- g. Prop Gov Test Switch RELEASE
- * 13. Primary Governors EXERCISE AT 1900 RPM
[RVS NOT READY] - ILLUMINATED as prop levers retarded
- * 14. Gyro Suction and Pneumatic Pressure Gages CHECK at 1900 RPM
- * 15. Autofeather (if installed) CHECK
 - a. Power Levers APPROXIMATELY 500 FT-LBS TORQUE
 - b. Autofeather Switch HOLD TO TEST
[L AUTOFEATHER] and [R AUTOFEATHER] - ILLUMINATED
 - c. Power Levers RETARD INDIVIDUALLY;
then return to approximately 500 ft-lbs torque
 - 1) At approximately 400 ft-lbs OPPOSITE ANNUNCIATOR EXTINGUISHED
 - 2) At approximately 260 ft-lbs [AUTOFEATHER]
will cycle on and off with each fluctuation of torque and the propeller will start to feather.
 - d. Power Levers BOTH RETARDED
[L AUTOFEATHER] & [R AUTOFEATHER] - EXTINGUISHED
(neither propeller feathers)
- 16. Autofeather (if installed) ARM
- 17. Prop Feathering (manual) CHECK (LO IDLE)
- 18. Ice Protection Equipment (if required) CHECK
 - a. Auto Ignition CHECK
 - 1) Power Levers IDLE
 - 2) Auto Ignition ARM [L IGNITION ON] & [R IGNITION ON] - ILLUMINATED
 - 3) Power Levers ADVANCE ABOVE 425 FT-LBS TORQUE
[L IGNITION ON] & [R IGNITION ON] - EXTINGUISHED
 - 4) Power Levers IDLE
[L IGNITION ON] & [R IGNITION ON] - ILLUMINATED
 - 5) Auto Ignition OFF
[L IGNITION ON] & [R IGNITION ON] - EXTINGUISHED
 - b. Engine Anti-Ice CHECK (system initially ON)

WARNING

Either the MAIN or STANDBY actuator must be operational on each engine before takeoff.

- 1) Engine Anti-Ice Actuators STANDBY

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- 2) Engine Anti-Ice OFF
[L ENG ANTI-ICE] and [R ENG ANTI-ICE] - EXTINGUISHED
- 3) Engine Anti-Ice Actuators MAIN
- 4) Engine Anti-Ice ON
[L ENG ANTI-ICE] and [R ENG ANTI-ICE] - ILLUMINATED
- c. Windshield Anti-Ice, Pilot's and Copilot'sCHECK INDIVIDUALLY
 - 1) Windshield Anti-Ice HI
(observe increase on left and right loadmeters)
 - 2) Windshield Anti-Ice OFF, THEN NORMAL
(observe increase on left and right loadmeters)
 - 3) Windshield Anti-Ice OFF
- d. Electrothermal Propeller DeiceCHECK

CAUTION

Do not operate propeller deice when the propellers are static.

- 1) Prop Deice ON
- 2) Deice Ammeter18 TO 24 AMPS
(monitor for 90 seconds to ensure automatic timer operation)
- 3) Prop Deice OFF
- e. Surface Deice SystemCHECK
 - 1) Condition Levers HIGH IDLE
 - 2) Pneumatic Pressure GREEN ARC (12-20 PSI)
 - 3) Surface Deice Switch..... SINGLE AND RELEASE
 - a) Pneumatic Pressure GageWILL DECREASE MOMENTARILY
 - b) Boots..... CHECK BOTH WING AND BOTH HORIZONTAL STABILIZER BOOTS
VISUALLY, IF POSSIBLE, FOR INFLATION AND VACUUM HOLD DOWN
 - c) Wing Boots will inflate in approximately 6 seconds, followed by horizontal stabilizer boots.
 - 4) Surface Deice Switch.....MANUAL AND HOLD
 - a) Pneumatic Pressure GageWILL DECREASE MOMENTARILY
 - b) Boots..... CHECK BOTH WING AND BOTH HORIZONTAL STABILIZER
BOOTS VISUALLY, IF POSSIBLE, FOR INFLATION
 - 5) Surface Deice Switch.....RELEASE
 - Boots CHECK BOTH WING AND BOTH HORIZONTAL STABILIZER BOOTS
VISUALLY, IF POSSIBLE, FOR VACUUM HOLD DOWN
 - 6) Condition Levers LOW IDLE
- f. Pitot HeatCHECK
(observe slight increase in loadmeter)

CAUTION

Prolonged use of the pitot heat on the ground will damage the heating elements.

- 19. Fuel Quantity, Flight and Engine InstrumentsCHECK
- 20. Takeoff Speeds CONFIRM

BEFORE TAKEOFF (FINAL ITEMS)

- 1. Engine Auto Ignition ARM (if required)
[L IGNITION ON] and [R IGNITION ON] - ILLUMINATED
- 2. Engine Anti-iceAS REQUIRED
[L ENG ANTI-ICE] and [R ENG ANTI-ICE] - ILLUMINATED, if on
- 3. Autofeather (if installed).....CONFIRM ARMED

4. Prop Sync AS REQUIRED
5. Exterior Lights AS REQUIRED
6. Ice Protection AS REQUIRED
 - a. Windshield Anti-ice NORMAL/HI (if required)
 - b. Prop Deice ON (if required)
 - c. Left and Right Fuel Vent Heat ON
 - d. Stall Warning Heat ON
 - e. Left and Right Pitot Heat ON
7. Transponder ALT
8. Prop Levers CONFIRM FULL FORWARD
9. Trim CONFIRM SET
10. Flaps CONFIRM SET
11. Bleed Air Valves CONFIRM OPEN
12. Interior Lights AS REQUIRED
13. Generator Load CHECK
14. Battery Ammeter (Airplanes LJ-1534 and After) CHECK
(charge current 10 amps or less if required)
15. Annunciators EXTINGUISHED OR CONSIDERED

ON TAKEOFF ROLL

- [L AUTOFEATHER] and [R AUTOFEATHER] (if installed) ILLUMINATED

TAKEOFF

WARNING

Do not cycle deice boots during takeoff.

1. Refer to Section 5, PERFORMANCE for minimum take-off power, take-off speed, take-off distance and climb data.
2. Monitor ITT and engine torque. Increasing airspeed will cause torque and ITT to increase.
3. Rotating beacons, strobe lights, and tail flood lights should be switched off (at the pilot's discretion) when encountering haze, fog, or clouds.

CLIMB

1. Landing Gear UP
2. Climb Power SET (Observe maximum ITT, torque, and N_1 limits)
3. Prop RPM 2200 (MCP)/ 2000 (Cruise Climb)
4. Prop Sync ON
5. Windshield Anti-Ice NORMAL

CAUTION

The practice of turning the windshield anti-ice on early in the flight is recommended if it is anticipated that it will be required later in the flight after the windshield has been cold-soaked. Activating the windshield anti-ice after the windshield has been cold-soaked may cause the windshield to crack.

6. Engine Instruments MONITOR
7. Cabin Sign AS REQUIRED
8. Cabin Pressurization CHECK

WARNING

Do Not Lift Power Levers In Flight.

1. Cruise Power SET per CRUISE POWER TABLES or GRAPHS
2. Autofeather (if installed) OFF
3. Engine Instruments MONITOR
4. Pressurization MONITOR
(Reset if cruise altitude changes by 1000 feet or more.)

ICING CONDITIONS

WARNING

Due to distortion of the wing airfoil, ice accumulations on the leading edges can cause a significant loss in rate of climb and in speed performance, as well as increases in stall speed. Even after cycling the deicing boots, the ice accumulation remaining on the boots and unprotected areas of the airplane can cause large performance losses. For the same reason, the aural stall warning system may not be accurate and should not be relied upon. Maintain a comfortable margin of airspeed above the normal stall airspeed. In order to minimize ice accumulation on unprotected surfaces of the wing, maintain a minimum of 140 knots during operations in sustained icing conditions. Prior to a landing approach, cycle the deicing boots to shed any accumulated ice.

1. Engine Ice Protection

Before visible moisture is encountered at +5°C and below, or:

At night when freedom from visible moisture is not assured at +5°C and below. (Operation of strobe lights will sometimes show ice crystals not normally visible.)

- a. Engine Anti-ice ON
[L ENG ANTI-ICE] & [R ENG ANTI-ICE] - ILLUMINATED
- b. Engine Instruments DROP IN TORQUE AND INCREASE IN
ITT INDICATES PROPER OPERATION

NOTE

Illumination of the L and/or R [ENG ICE FAIL] indicates a failure of the selected Engine Anti-ice System. Immediate illumination indicates loss of power to the actuator(s). Select the other actuator(s).

- c. Power RESET, IF DESIRED (observe engine limitations)

WARNING

If in doubt, actuate the Engine Anti-ice System. Engine icing can occur even though no surface icing is present. If freedom from visible moisture cannot be assured, engine ice protection should be activated. Visible moisture is moisture in any form; clouds, ice crystals, snow, rain, sleet, hail or any combination of these.

2. Auto Ignition ARM

NOTE

Engine Auto Ignition must be armed for icing flight, precipitation, and operation during turbulence. To prevent prolonged operation of the ignitors with the system armed, do not reduce power levers below 425 ft-lbs torque.

3. Electrothermal Prop Deice ON
 - a. The system may be operated continuously in flight, and will function automatically until the switch is turned off.
 - b. Prop RPM MODULATE BRIEFLY TO RELIEVE PROPELLER
IMBALANCE DUE TO ICE. REPEAT AS NECESSARY.

CAUTION

If the deice ammeter does not indicate 18-24 amperes, or if the automatic timer fails to switch, refer to Section 3A, ABNORMAL PROCEDURES.

4. Surface Deice

WARNING

All components of the surface deice system must be monitored during icing flight to ensure the system is functioning normally. These components include:

Pneumatic Pressure Gage. The gage should indicate 12-20 psi before boots are activated. The pressure will momentarily decrease when the boots are activated.

Gyro Suction Gage. The gage should indicate in the area of the green arc corresponding to the airplane altitude. The vacuum will momentarily decrease when the boots are activated.

Pneumatic Boots. Visually monitor the boots, where possible, to ensure ice is being removed.

CAUTION

Operation of the surface deice system in ambient temperatures below -40°C can cause permanent damage to the deice boots.

When Ice Accumulates to 1/2 to 1 inch:

- a. Surface Deice Switch SINGLE and RELEASE
- b. Repeat as required.

If Single Position of the Surface Deice Switch Fails:

- c. Surface Deice Switch MANUAL AND HOLD FOR A MINIMUM OF 6 SECONDS, THEN RELEASE
- d. Repeat as required.

5. Windshield Anti-Ice NORMAL/HI

NOTE

To ensure adequate windshield anti-icing protection, operation in icing conditions at or below ambient temperatures of -24°C is not recommended. In the event of windshield icing, reduce airspeed as required.

6. Fuel Vent Heat CONFIRM ON
7. Pitot Heat CONFIRM ON
8. Stall Warning Heat CONFIRM ON
9. Ice Lights AS REQUIRED
10. Alternate Static Air Source REFER TO SECTION 3A, ABNORMAL PROCEDURES

DESCENT

1. Pressurization SET
 - a. Cabin Altitude Selector Knob SET
per PRESSURIZATION CONTROLLER SETTING FOR LANDING graph, or so that "CABIN ALT" DIAL INDICATES LANDING FIELD PRESSURE ALTITUDE PLUS 500 FEET
 - b. Rate Control Selector Knob AS DESIRED

NOTE

To prevent the ram air flapper door from opening, ensure the cabin Altitude Selector is properly set and airspeed is reduced below approximately 180 KIAS in the landing pattern.

2. Altimeter SET
3. Cabin Sign AS REQUIRED

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Normal Procedures

Raytheon Aircraft Company

Model C90A

4. Windshield Anti-Ice AS REQUIRED
(well before descent into warm, moist air, to aid in defogging)
5. Power AS REQUIRED

NOTE

Approximately 75% N₁ is required to maintain the pressurization schedule during descent.

6. Recognition Lights AS REQUIRED
7. Seats and Tables POSITIONED
 - a. All Seats - Seatbacks Upright, Headrests fully extended
 - b. Lateral-tracking Seats - Outboard position
 - c. Tables - Stowed

BEFORE LANDING

1. Approach Speed CONFIRM
2. Pressurization CHECK
3. Cabin Sign. FSB or NO SMOKE & FSB
4. Autofeather (if installed) ARM
5. Flaps APPROACH
6. Landing Gear DOWN
7. Lights AS REQUIRED

NOTE

Under some low visibility conditions, landing and taxi lights should be left off due to light reflections.

8. Radar AS REQUIRED
9. Surface Deice CYCLE AS REQUIRED

NOTE

Prior to the landing approach, cycle the wing deice boots to shed as much residual ice as possible, regardless of the amount of ice remaining on the boots. Stall speeds can be expected to increase if ice is not shed from the deice boots.

If Residual Ice Remains On Wing Boots:

10. Approach Speed and Landing Distance INCREASE

NOTE

If crosswind landing is anticipated, determine the crosswind component from the Wind Components graph in Section 5, PERFORMANCE. Immediately prior to touchdown, lower up-wind wing and align the fuselage with the runway. During rollout, hold aileron control into the wind and maintain directional control with rudder and brakes.

NORMAL LANDING

1. Flaps DOWN
2. Airspeed NORMAL LANDING APPROACH SPEED
(increase with residual ice)
3. Yaw Damp. OFF
4. Power Levers IDLE
5. Prop Levers FULL FORWARD

After Touchdown:

6. Power Levers LIFT AND SELECT GROUND FINE
7. Brakes AS REQUIRED

MAXIMUM REVERSE THRUST LANDING

1. Flaps DOWN
2. Airspeed NORMAL LANDING APPROACH SPEED
(increase with residual ice)
3. Yaw Damp OFF
4. Condition Levers HIGH IDLE
5. Power Levers IDLE
6. Prop Levers FULL FORWARD

CAUTION

To ensure consistent reversing characteristics, the Propeller Levers must be in the HIGH RPM position.

After Touchdown:

7. Power Levers LIFT AND SELECT GROUND FINE, THEN LIFT AND SELECT REVERSE
8. Brakes AS REQUIRED
9. Condition Levers LOW IDLE

CAUTION

If possible, propellers should be moved out of reverse at approximately 40 knots to minimize propeller blade erosion. Care must be exercised when reversing on runways with loose sand, dust or snow on the surface. Flying gravel will damage propeller blades, and dust or snow may impair the pilot's visibility.

BALKED LANDING

1. Power MAX ALLOWABLE
2. Airspeed 101 KNOTS
3. Flaps UP
4. Landing Gear UP
5. Airspeed (when clear of obstacles) NORMAL CLIMB

AFTER LANDING

1. Landing and Taxi Lights AS REQUIRED
2. Engine Anti-ice ON

CAUTION

To minimize ingestion of ground debris, the engine anti-ice system should be ON for all ground operations.

3. Ice Protection AS REQUIRED
4. Transponder STANDBY
5. Radar STANDBY or OFF
6. Electrical Load OBSERVE LIMITS
7. Trim SET
8. Flaps UP
9. Pressurization Differential VERIFY 0

SHUTDOWN AND SECURING

1. Parking Brake SET
2. Transfer Pumps OFF
3. Crossfeed CLOSED

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Normal Procedures

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Model C90A

- 4. EFIS Aux Power (if installed) OFF
- 5. EFIS Power (if installed) OFF
- 6. Avionics Master OFF
- 7. Inverter OFF
- 8. Autofeather (if installed) OFF
- 9. Vent Blower AUTO
- 10. Cabin Mode Control OFF
- 11. Subpanel Switches OFF or AS REQUIRED
- 12. Oxygen System Control PUSH OFF
- 13. Battery CHARGED
- 14. ITT STABILIZED AT MINIMUM OBTAINABLE TEMPERATURE FOR ONE MINUTE

CAUTION

Monitor ITT during shutdown. If sustained combustion is observed, proceed immediately to the ENGINE CLEARING procedure. During shutdown, ensure that the compressors decelerate freely. Do not close the Firewall Fuel Shutoff Valve for normal engine shutdown.

- 15. Instrument Emergency Lights (if desired for a night shutdown) ON
- 16. Power Levers IDLE
- 17. Condition Levers FUEL CUT OFF
- 18. Props FEATHERED

NOTE

N₁ decreasing below 15% indicates the starter relay is not engaged.

- 19. Boost Pumps (below 10% N₁) OFF
- 20. Control Locks AS REQUIRED
- 21. Parking Brake (if required). OFF
- 22. Battery and Generators OFF
- 23. Overhead Panel Light Switches AS REQUIRED
- 24. Instrument Emergency Lights OFF

CAUTION

The boost pumps, crossfeed, emergency lighting, and entry stair lighting are connected to the battery bus. Failure to turn these switches OFF will discharge the battery.

- 25. External Covers, Tie Downs and Chocks INSTALL AS REQUIRED